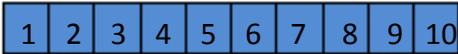


Rounding

Rounding is used to simplify numbers. When rounding we are creating numbers that are approximate to their original value. The benefit to rounding is that it gives us numbers that are easier to work with. The downside to rounding is that the numbers will not always be exact.

Example 1:

We use rounding in our everyday lives. For example, you are hosting a party and are expecting eighteen (18) guests. You would like to purchase party favors for your guests but they only come in packages of ten (10). How many packages should you purchase?

 $18 - 10 = 8$	
One package would leave 8 party-goers without any party favors.	Two packages would give you enough to cover 18 guests with 2 left over.

How to Round Numbers

When rounding, numbers can be **rounded up** or **rounded down**. This depends on the neighboring digit of the place value to be rounded.

Note: Review the Place Value Chart below before beginning to round.

Ten millions (10 000 000)	Millions (1 000 000)	Hundred thousands (100 000)	Ten thousands (10 000)	Thousands (1000)	Hundreds (100)	Tens (10)	Ones (1)	Decimal Point	Tenths ($\frac{1}{10}$)	Hundredths ($\frac{1}{100}$)	Thousandths ($\frac{1}{1000}$)	Ten thousandths ($\frac{1}{10000}$)
1	3	6	5	2	0	1	8	•	3	5	7	2
←									→			
Numbers are getting bigger.									Numbers are getting smaller.			

Note: Numbers to the right of the decimal end in “ths” and numbers to the left of the decimal mostly end in “ands” and “eds”.

Rounding

When rounding, use the following steps as a guide.

Step 1:	Circle the place value of the digit to be rounded. This is the rounding digit.
Step 2:	Look to the neighboring digit on the right.
Step 3:	<p>a) If the neighboring digit is less than five (0 - 4), keep the rounding digit the same. This is called rounding down.</p> <p>b) If the neighboring digit is five or greater (5 - 9), increase the rounding digit by one. This is called rounding up.</p>
Step 4:	<p>a) When rounding to the <u>left hand side of the decimal</u>, all digits to the right side of the rounding digit will become 0 up until the decimal point.</p> <p>b) When rounding to the <u>right hand side of the decimal</u>, drop all digits to the right of the rounding digit.</p>

Exercise 1: Round the following number to the thousandths place value.

Round to the nearest thousandth	hundred thousands	ten thousands	thousands	hundreds	tens	ones	Decimal point	tenths	hundredths	thousandths	ten thousandths
Number	3	8	4	3	0	6	•	4	7	5	3
Rounded Number	3	8	4	3	0	6	•	4	7	5	
Step 1:	Circle the digit in the thousandths place value.										
Step 2:	Look to the neighboring digit on the right.										
Step 3:	Since the neighboring digit is less than 5, the thousandths digit stays the same.										
Step 4:	Everything to the right of the thousandths place value gets cut off.										

Rounding

Exercise 2: Round the number 384306.4753 to the nearest ten.

- Step 1:** Circle the digit in the tens place value.
Step 2: Look to the neighboring digit on the right.
Step 3: Since the neighboring digit is greater than 5, the tens place value goes up by 1.
Step 4: Digits to the right of the tens place become 0 up until the decimal point.

3 8 4 3 0 6. 4 7 5 3
3 8 4 3 1 0

Exercise 3: Round the number 384306.4753 to the nearest ten thousand.

- Step 1:** Circle the digit in the ten thousands place value.
Step 2: Look to the neighboring digit on the right.
Step 3: Since the neighboring digit is less than 5, the ten thousands place value stays the same.
Step 4: Digits to the right of the ten thousands place value become 0 up until the decimal point.

3 8 4 3 0 6. 4 7 5 3
3 8 0 0 0 0

Exercises:

Round the following numbers to the place value indicated in brackets.

- | | |
|---------------------------|--------------------------------|
| a) 25 (ten) = | i) 1.000599 (ten thousandth) = |
| b) 340.3 (hundred) = | j) 0.299 (hundredth) = |
| c) 5683.09 (tenth) = | k) 15.0293 (ten) = |
| d) 36.407 (hundredth) = | l) 8730.52 (thousand) = |
| e) 0.0032 (tenth) = | m) 0.0099 (thousandth) = |
| f) 8.0109 (hundredth) = | n) 452.98 (hundredth) = |
| g) 489.9 (one) = | o) 3.053209 (hundredth) = |
| h) 55678.036 (thousand) = | p) 7534.033 (ones) = |

Rounding

Solutions:

1. Round the following numbers to the place value indicated in brackets.

- | | |
|------------------|------------------|
| a) 30 | i) 1.0006 |
| b) 300 | j) 0.30 |
| c) 5683.1 | k) 20 |
| d) 36.41 | l) 9000 |
| e) 0 | m) 0.010 |
| f) 8.01 | n) 452.98 |
| g) 490 | o) 3.05 |
| h) 56000 | p) 7534 |